EV063796577US Rec'd PCT/PTO 20 FEB 2002

FORM PTO-1390 (Modified) (REV 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: **MFA-14402/04**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR): 10/049923

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/07078	**24 July 2000**	**26 August 1999**

TITLE OF INVENTION

A METHOD FOR DEHYDRATING BIOLOGICAL TISSUE FOR PRODUCING PRESERVED TRANSPLANTS

APPLICANT(S) FOR DO/EO/US

Ludwig Baumgartner

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☒ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☒ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☐ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Application Data Sheet
Postcard

25006
PATENT TRADEMARK OFFICE

PCTUS1/REV03

U.S. APPLICATION NO (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/049923	PCT/EP00/07078	MFA-14402/04

24. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1040.00**	
☒	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$890.00**	
☐	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$740.00**	
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$710.00**	
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**	
	ENTER APPROPRIATE BASIC FEE AMOUNT =	**$890.00**
	Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	**$130.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	7 - 20 =	0	x $18.00	**$0.00**
Independent claims	1 - 3 =	0	x $84.00	**$0.00**
Multiple Dependent Claims **(check if applicable)**			☐	**$0.00**

	TOTAL OF ABOVE CALCULATIONS =	**$1,020.00**
☐	Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.	**$0.00**
	SUBTOTAL =	**$1,020.00**
	Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +	**$0.00**
	TOTAL NATIONAL FEE =	**$1,020.00**
☐	Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).**	**$0.00**
	TOTAL FEES ENCLOSED =	**$1,020.00**
	Amount to be: refunded	$
	charged	$

a. ☒ A check in the amount of **$1,020.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **07-1180** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Douglas W. Sprinkle
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SIGNATURE

Douglas W. Sprinkle
NAME

27,394
REGISTRATION NUMBER

2/20/02
DATE

Attorney Docket No. MFA-14402/04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ludwig Baumgartner

Serial No.:

Filed:

For: METHOD FOR DEHYDRATING BIOLOGICAL TISSUE FOR PRODUCING PRESERVED TRANSPLANTS

PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to the examination of this application, please amend the application as follows:

IN THE CLAIMS:

Please amend claim 3 as follows:

3. (Amended) A method in accordance with claim 1, wherein, in the first step, dehydration is carried out at a temperature from 0°C to 70°C.

Please amend claim 4 as follows:

4. (Amended) A method in accordance with claim 1, wherein the tissue is subjected to a vacuum treatment before the second step.

Please amend claim 5 as follows:

5. (Amended) A method in accordance with claim 1, wherein, in the first step, the tissue is subjected to a vacuum treatment before the first extraction step and after every extraction step with the organic solvent.

Please amend claim 6 as follows:

6. (Amended) A method in accordance with claim 1, wherein, in the first step, the tissue is subjected to a treatment with ultrasound, with a vibrator or with a shaker during the extraction with the organic solvent.

Please amend claim 7 as follows:

7. (Amended) A method in accordance with claim 1, wherein, in the first step, an overpressure, an alternating pressure or an underpressure is applied during the extraction with the organic solvent.

REMARKS

If the Examiner has any questions relating to the application, Applicant's attorney may be reached at (248) 647-6000.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

Respectfully submitted,

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Date: 2/20/02

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GS–W.\Word Processing\dws\MFA14402-pre.doc

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 3 has been amended as follows:

3. (Amended) A method in accordance with [any one of claims] claim 1 [or 2], wherein, in the first step, dehydration is carried out at a temperature from 0°C to 70°C.

Claim 4 has been amended as follows:

4. (Amended) A method in accordance with [any one of claims] claim 1 [to 3], wherein the tissue is subjected to a vacuum treatment before the second step.

Claim 5 has been amended as follows:

5. (Amended) A method in accordance with [any one of claims] claim 1 [to 4], wherein, in the first step, the tissue is subjected to a vacuum treatment before the first extraction step and after every extraction step with the organic solvent.

Claim 6 has been amended as follows:

6. (Amended) A method in accordance with [any one of claims] claim 1 [to 5], wherein, in the first step, the tissue is subjected to a treatment with ultrasound, with a vibrator or with a shaker during the extraction with the organic solvent.

Claim 7 has been amended as follows:

7. (Amended) A method in accordance with [any one of claims] claim 1 [to 5], wherein, in the first step, an overpressure, an alternating pressure or an underpressure is applied during the extraction with the organic solvent.

2/PRTS

A method for dehydrating biological tissue for producing preserved transplants

The present invention relates to a method for dehydrating biological tissue for producing preserved transplants.

Methods for the dehydration of biological tissue for producing preserved transplants deliver autografts, allografts or xenografts which are available to the surgeon at any time as required.

Transplants should have a morphological structure very similar to the native tissue, for example skin, tendons, bones and their properties should largely correspond to those of the native tissue. The required properties include internal surface, handling capability and elasticity. Furthermore, still further criteria must also be observed in the producing of preserved transplants. The transplant must be able to be stored in a sterile condition for practically any length of time while maintaining its properties. It must furthermore have a certain resistance to degradation by the receiving organism so that it can function as a guide rail for tissue sprouting in.

A known method for dehydrating biological tissue for producing preserved transplants makes use of freeze drying. The aqueous tissue is frozen at approximately -25°C to -40°C and the ice which arises is

removed by sublimation in a vacuum. The resulting tissue has a low water content. It can be stored in a sterile condition for a long period while maintaining its properties and is available, when required, as a ready-to-use preserved transplant.

This method is, however, connected to disadvantages. With areal collagenic tissue, for example with dura mater, relatively thick spongiform materials are created which makes their handling more difficult. The collagenic starting tissue is a swollen fibrous network in the moist state and this state is fixed during deep freezing. The ice crystals which form between the fibers and the fibrils during freezing loosen the fiber structure. During the subsequent sublimation, cavities arise in the tissue which degrade its properties in comparison with the native tissue. In particular the elasticity is substantially degraded. Furthermore, as a result of partial bonding of the fibrils, the inner surface is dramatically degraded. The resulting product thereby only has a greatly reduced guide rail effect for inwardly sprouting connective tissue when used as a transplant.

Due to these disadvantages of freeze drying, a method is described in DE 29 06 650 C2 in which the collagenic tissue is dehydrated with an organic solvent which can be mixed with water. In this method, a gradual de-swelling of the biological tissue takes place during the successive extraction of the water so that the native fibrillary structure is maintained and no bonding of the fibrils occurs. Consequently, the inner surface of the tissue dehydrated in this way corresponds to that which the native tissue has. The elasticity is likewise substantially

maintained. In this method, however, a number of extraction steps are required for the far-reaching dehydration in which the solvent has to be replaced over and over again. With spongiosa bones upt to 20 extraction steps are required. This represents a time-consuming process. The frequent solvent changes are also labor and cost intensive. Furthermore, an environmentally friendly recycling method is required for the solvent.

A method is described in DE 38 35 237 C1 in which bovine pericard tissue is dehydrated with acetone, dried in air, rehydrated with water and then freeze dried. First, this method is relatively complex and, second, the same disadvantages occur as were described above with the method of freeze drying, since the rehydrated tissue is freeze dried.

The object of the present invention is the providing of a method for dehydrating biological tissue for producing preserved transplants in which the native structure of the collagenic tissue is largely maintained, on the one hand, and which is less time-consuming and less labor and cost intensive, on the other hand.

To satisfy this object, a method is provided for dehydrating biological tissue for producing preserved transplants in which, in a first step, the tissue is partly dehydrated with an organic solvent which can be mixed with water and, in a second step, the tissue is further dehydrated by freeze drying.

It is possible with this two-step method to achieve a faster dehydration,

which is also more favorable under labor and cost aspects, while simultaneously maintaining the native structure, in particular the inner surface, and the elasticity of the collagenic material. The number of extraction steps with the organic solvent can be considerably lowered in comparison with a preservation method in which dehydration takes place only with organic solvents. The preservation process is thereby considerably shortened, solvent is saved and, consequently, less solvent is led to recycling and also frequent, labor-intensive changing of the solvent with added water for fresh solvent is saved. The freeze drying step additionally provides the advantage of simple handling due to the drying with fully automated apparatuses. The initially named disadvantages of freeze drying surprisingly do not occur with the method in accordance with the invention.

Human or animal tissue can be used as the biological tissue in the method of the invention, for example skin, dura mater, fascia lata, tendons, vessels, cartilage, pericard, bones and plates made of bone, nails, pins, screws. This tissue consists of collagen or of collagen and mineral components. The transplants produced in accordance with the method of the invention are available to the surgeon at any time.

The tissue is preferably dehydrated in the first step with the organic solvent which can be mixed with water to a water content in the range from 10 weight percent to 25 weight percent. With soft tissue such as skin, dura mater, fascia lata, dehydration is preferably carried out to a water content in the range from 17 weight percent to 20 weight percent. With hard tissue such as bone, in particular spongiosa bone,

dehydration is preferably carried out to a water content in the range from 10 weight percent to 15 weight percent, with, as is to be expected, the structure of the native tissue being maintained. However, it is surprising that the subsequent freeze drying in the second step for the further dehydration up to the desired water content of less than 8 weight percent, which is as low as possible, does not have a negative effect on the tissue structure.

Methanol, ethanol, propanol, isopropanol, acetone, methyl ethyl ketone or their mixtures can be used, for example, as solvents in a manner known per se. Preferably, acetone is used a an organic solvent which can be mixed with water. The solvent used should have a water content which is as low as possible, it should preferably be free of water. The dehydration with the solvent is carried out at temperatures in the range from 0°C to 70°C depending on the solvent used. The dehydration of the first step preferably takes place at room temperature.

The tissue is preferably exposed to a vacuum after the dehydration of the first step before it is deep frozen to temperatures from approximately -25°C to -40°C. The organic solvent is thereby largely removed from the tissue.

In the dehydration in particular of spongiosa bone, it can be advantageous to simultaneously carry out a treatment with ultrasound, vibrators or rockers in the first step during the dehydration with the organic solvent. This promotes a better penetration of the solvent into the fine passages of the spongiosa bone and thereby the degreasing and

the dehydration. For the same purpose, an overpressure, alternating pressure or underpressure can also be applied. It can furthermore be advantageous to carry out a vacuum treatment before the first extraction step and after every extraction step before dehydration is carried out with fresh solvent in the next step. This also promotes degreasing and a better exchange of the aqueous organic solvent in the passages with fresh organic solvent. All these measures can also be carried out with soft tissues.

The freeze drying in the second step takes place in a conventional freeze drying unit. The partly dehydrated tissue is therein gradually brought to temperatures from, for example, -25°C to -40°C and the ice produced in the tissue is removed by sublimation by applying a vacuum. As already stated further above, a vacuum is preferably applied before the freeze drying, that is before the cooling of the tissue to low temperatures. In this way, the solvent is removed from the tissue in part. The freeze drying follows on from this.

The invention will be explained in more detail with reference to the following examples and to Figures 1 and 2. Figures 1 and 2 are diagrams in which the time curve of the dehydration of the tissue in the examples is shown. The time in hours or days is entered on the abscissa and the water content in weight percent relative to the total weight of the material to be dehydrated on the ordinate.

Example 1

Dura mater is removed from the human body and liberated in a manner

known to one skilled in the art from antigenic substances and enzymes. For preservation, the tissue parts cleaned in this manner are treated twice for six hours at a time by being placed into anhydrous acetone at room temperature. The solvent quantity amounts in each case to 500% of the wet weight of the tissue, with a de-swelling of the tissue taking place from 0.65 mm to 0.57 mm. The water content at the completion of this first dehydration step amounts to 20 weight percent.

In the second step, the tissue is cooled for three hours to -40°C in a freeze drying unit. Then, a vacuum of 1.2 mbar is applied for removing the ice formed in the tissue by sublimation. The shelf temperature amounts to 35°C. The water content after the second step, which takes a total of 15 hours, amounts to 6 weight percent. The thickness of the tissue amounts to 0.54 mm and the inner surface is 20 m^2/g. The course of dehydration is shown in Figure 1.

After packing in moisture-tight pouches and after sterilizing with gamma rays with a minimum dosage of 15 Kgry, the preserved dura mater can practically be stored without limitation and is ready for use for transplants.

If, insteaed, the dehydration of the dura mater is carried out only with acetone to the same water content of 6 weight percent, three extraction steps of 12 hours each must be conducted.

Example 2

A spongiosa bone is prepared in a suitable manner known to one skilled

in the art. For preservation, the prepared bone is treated five times for 24 hours each time with anhydrous acetone at room temperature. The solvent quantity amounts to 500% of the wet weight of the bone in each case. After this treatment, the water content amounts to 12 weight percent. The bone is subsequently cooled for 3 hours to -40°C in the second step and then a vacuum of 1.2 mbar applied for removing the ice formed in the bone by sublimation. The shelf temperature amounts to 35°C. The water content after the second step, which takes a total of 48 hours, amounts to 2 weight percent. The dehydration course is shown in Fig. 2.

If, instead, the dehydration of the spongiosa bone is carried out only with acetone, then up to 20 extraction steps of 24 hours each are required, with approximately 60 ltrs. of acetone being requird per 1 kg of bone.

ARTICLE 34

Claims

1. A method for dehydrating biological tissues for producing preserved transplants, wherein, in a first step, the tissue is dehydrated to a water content in the region from 10 weight percent to 25 weight percent with an organic solvent which can be mixed with water and, in a second step, the tissue is further dehydrated by freeze drying.

2. A method in accordance with claim 1, wherein, in the first step, dehydration is carried out with methanol, ethanol, propanol, isopropanol, acetone, methyl ethyl ketone or their mixtures.

3. A method in accordance with any one of claims 1 or 2, wherein, in the first step, dehydration is carried out at a temperature from 0°C to 70°C.

4. A method in accordance with any one of claims 1 to 3, wherein the tissue is subjected to a vacuum treatment before the second step.

5. A method in accordance with any one of claims 1 to 4, wherein,

in the first step, the tissue is subjected to a vacuum treatment before the first extraction step and after every extraction step with the organic solvent.

6. A method in accordance with any one of claims 1 to 5, wherein, in the first step, the tissue is subjected to a treatment with ultrasound, with a vibrator or with a shaker during the extraction with the organic solvent.

7. A method in accordance with any one of claims 1 to 5, wherein, in the first step, an overpressure, an alternating pressure or an underpressure is applied during the extraction with the organic solvent.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
1. März 2001 (01.03.2001)

PCT

(10) Internationale Veröffentlichungsnummer
WO 01/13718 A1

(51) Internationale Patentklassifikation[7]: A01N 1/02, C12N 5/00

(21) Internationales Aktenzeichen: PCT/EP00/07078

(22) Internationales Anmeldedatum:
24. Juli 2000 (24.07.2000)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
199 40 426.7 26. August 1999 (26.08.1999) DE

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(84) Bestimmungsstaaten *(regional)*: ARIPO-Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI-Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Veröffentlicht:
— *Mit internationalem Recherchenbericht.*

Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

WO 01/13718 A1

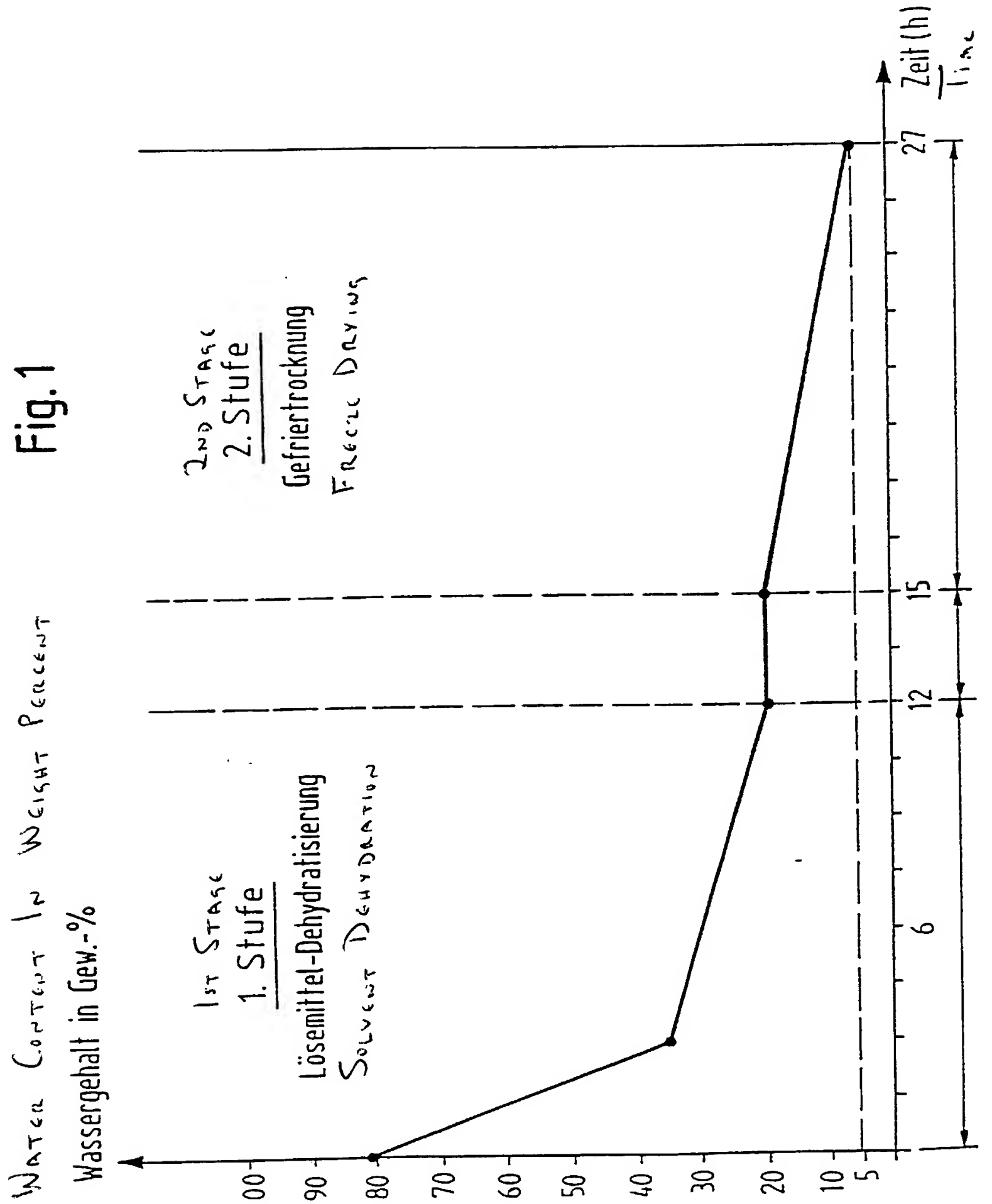
(54) **Title:** METHOD FOR DEHYDRATING BIOLOGICAL TISSUE FOR PRODUCING PRESERVED TRANSPLANTS

(54) **Bezeichnung:** VERFAHREN ZUM DEHYDRATISIEREN VON BIOLOGISCHEN GEWEBEN ZUR HERSTELLUNG VON TRANSPLANTAT-KONSERVEN

(57) **Abstract:** The invention relates to a two-step method for dehydrating biological tissues for producing preserved transplants. In a first step, the tissue is partially dehydrated with an organic, water-miscible solvent. In a second step, the tissue is dehydrated further by freeze drying.

(57) **Zusammenfassung:** Es wird ein zweistufiges Verfahren zum Dehydratisieren von biologischen Geweben zur Herstellung von Transplantat-Konserven beschrieben. Dabei wird in einer ersten Stufe mit einem organischen, mit Wasser mischbaren Lösemittel das Gewebe teilweise dehydratisiert. In einer zweiten Stufe wird das Gewebe durch Gefriertrocknung weiter dehydratisiert.

Fig. 1


Water Content In Weight Percent
Wassergehalt in Gew.-%
100
90
80
70
60
50
40
30
20
10
5
1st Stage
1. Stufe
Lösemittel-Dehydratisierung
Solvent Dehydration
2nd Stage
2. Stufe
Gefriertrocknung
Freeze Drying
6
12
15
27
Zeit (h)
Time

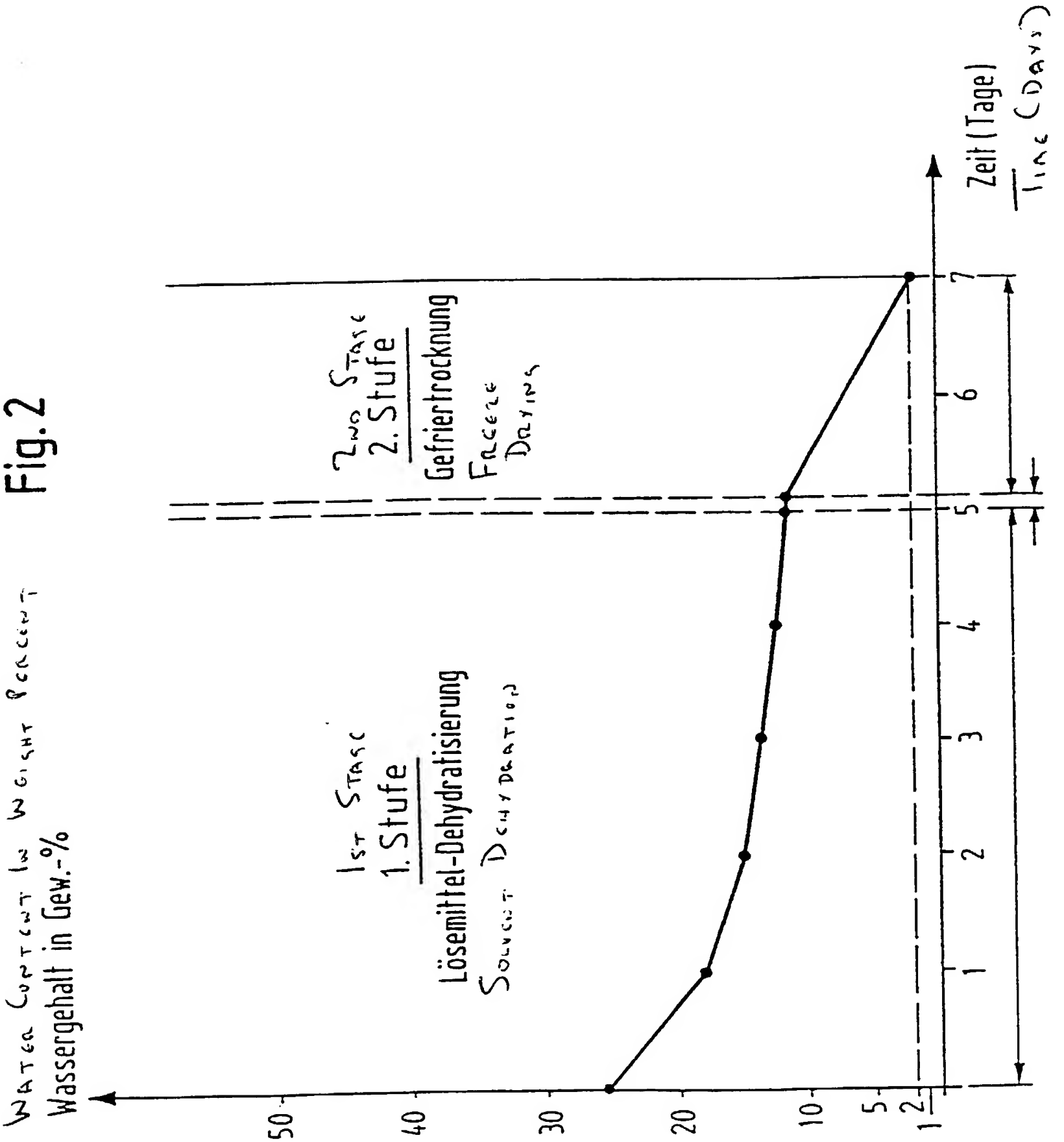

Water Content in Weight Percent
Wassergehalt in Gew.-%
50
40
30
20
10
5
2
1
1st Stage
1. Stufe
Lösemittel-Dehydratisierung
Solvent Dehydration
2nd Stage
2. Stufe
Gefriertrocknung
Freeze Drying
Zeit (Tage)
Time (Days)
1
2
3
4
5
6
7

Fig. 2

DECLARATION

I, Jeffrey C. Barfield, of Ahornstrasse 17, 82377 Penzberg, Germany, do hereby declare that I am conversant with the English and German languages and that I am a competent translator thereof.

I verify that the attached English translation is a true and correct translation of the PCT patent application with the international file reference

PCT/EP00/07078

and the international publication number

WO 01/13718 A1

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: January 29, 2002

Jeffrey C. Barfield

DECLARATION

I, Jeffrey C. Barfield, of Ahornstrasse 17, 82377 Penzberg, Germany, do hereby declare that I am conversant with the English and German languages and that I am a competent translator thereof.

I verify that the attached English translation is a true and correct translation of the amended claims of the PCT patent application with the international file reference

PCT/EP00/07078

and the international publication number

WO 01/13718 A1

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: January 29, 2002

Jeffrey C. Barfield

Docket No.
MFA-14402/04

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled
A METHOD FOR DEHYDRATING BIOLOGICAL TISSUE FOR PRODUCING PRESERVED TRANSPLANTS

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on **February 20, 2002** as United States Application No. or PCT International Application Number **10/049,923**

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)			Priority Not Claimed
199 40 426.7	**DE**	**26/08/99**	☐
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	☐
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	☐
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)	(Filing Date)
(Application Serial No.)	(Filing Date)
(Application Serial No.)	(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

PCT/EP00/07078	**7/24/00**	**pending**
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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